ENERGY STAR® DTA Stakeholder Meeting

October 25, 2006
Washington, DC

Agenda

- Welcome and Introductions
- Discussion of DTA Specification Framework – Approach
- Discussion of DTA Specification Framework – Definitions
- Discussion of Appropriate Test Procedures for DTAs
- Timeline and Next Steps

Discussion of DTA Specification Framework:

Approach

Framework Overview

- U.S. DTA landscape
- Projected energy consumption and potential savings
- Proposed definitions
- Two proposed approaches
- Test procedure considerations

U.S. DTA Landscape

- U.S. shifting from analog broadcasts to all digital on February 18, 2009
  - Consumers relying on over-the-air (OTA) signals will need to either purchase a DTA or buy a digital TV to continue watching OTA TV
- Approximately 22 million DTAs will be needed in the US following the analog cut-off

Projected DTA Energy Consumption & Potential Savings

- Typical DTAs today are estimated to consume about 17 watts in On Mode and 8 watts in Standby Passive Mode.
  - If left on all the time, power consumption would be 149 kWh/year per box
- With an expected 22 million DTAs entering U.S. homes, these products would consume approximately 3.29 billion kWh/year and cost $330 million per year to operate
- For comparison, a unit using 8 watts in On Mode and 1 watt in Standby Passive Mode that powers down after 4 hours, would consume between 27 and 32 kWh/yr

Two Proposed Approaches

- Framework Document solicits feedback on two possible approaches for the specification:
  - Modal Approach: challenges manufacturers to meet prescribed power levels in *both* On Mode and Standby Passive Mode, *and* incorporate a complying auto power down feature to earn the ENERGY STAR
  - Duty-Cycle Approach: challenges manufacturers to use any combination of efficient components, advanced integrated circuitry, and/or power management (auto power down, et al;) to achieve the specified kWh/year target to earn the ENERGY STAR.
    - This would require that EPA and interested stakeholders develop an accepted typical duty cycle to apply during testing.

Summary of Comments Received on Framework Document

Natural Resources Canada: Supportive of an ENERGY STAR DTA specification based on a modal approach, which incorporates auto-power down after 4 hours of user inactivity

- Plans to issue proposal regulating DTAs in Canada in the next 2 years

Consumer Electronics Association: Supportive of an ENERGY STAR DTA specification based on a modal approach

- Proposes that test procedure CEA 2013-A be used to measure Standby Passive (Sleep) Mode power consumption and CEA 2022 be used to measure On Mode power consumption
- Disagrees with EPA's assumptions regarding current power consumption estimates for DTAs and their usage patterns

Discussion of DTA Specification Framework:

Definitions

Proposed Product Definition

- *DTA*: Receives terrestrial, (over the air) digital signals and converts them to an analog output suitable for analog TVs. Does not provide digital signal output, and thus does not work with a digital TV. The DTA category does not include converters that work with satellite or cable digital signals, nor does it cover devices with multi-functionality such as a DVD player with digital to analog conversion capability
- Review of comments submitted to NTIA regarding energy efficiency and other suggested requirements/features for DTAs

Proposed Mode Definitions

Proposed Mode definitions mirror IEC 62087

- *On Mode*: The appliance is connected to a power source and fulfills its main function, e.g., receiving and converting a digital TV signal and repacking it in standard definition analog NTSC format
- *Standby Active Mode*: The appliance is connected to a power source, does not fulfill the main function but can be switched into another mode with the remote control unit or an internal signal. A DTA in this mode can also be switched into another mode with an external signal, and can be exchanging/receiving data with/from an external source. For DTAs, this operational mode would most typically include program guide updates
- *Standby Passive Mode*: The appliance is connected to a power source, does not fulfill the main function but can be switched into another mode with the remote control unit or an internal signal. This mode is typically the lowest power consuming mode that a DTA has while plugged in

Proposed Auto-Power Down Definition

Auto Power Down: A feature that operates similarly to power management features in computers, and would require the DTA to enter Standby Passive Mode after a certain pre-set number of hours of user inactivity (e.g., no channel changes being made)

Alternate Proposed Auto-Power Down Definition

Eligible equipment shall provide the capability to automatically switch from the On state to the Sleep state after a period of time without user input. This capability shall be enabled at the factory as the default setting for the device. The default period of inactivity before the equipment automatically switches to the Sleep state shall be four hours. Eligible equipment may allow the Current program to complete before switching to the Sleep state

The default energy related settings may not be altered during the initial user set-up process and shall persist unless the user chooses at a later date to manually:
a) disable the "automatic switching to Sleep state" capability, or
b) adjust the default time period from 4 hours to some other value

Discussion of Appropriate Test Procedures for DTAs

Typical Energy Consumption (TEC)

- AKA; Total Energy Consumption
- Has a lineage from the 80's in copiers
- First used in the new ENERGY STAR imaging equipment specification
- Can either be calculated OR observed based on a real duty cycle
- Currently being employed in a portion of the new ENERGY STAR computer specification

Calculated TEC

- cTEC= ∑(%TimeOff * PowerOff) +
  (%TimeActive * PowerActive)

Or a Calculated TEC from a more complex product

- cTEC= ∑(%TimeOff * PowerOff) +
  (%TimeSleep * PowerSleep) +
  (%TimeIdle * PowerIdle) +
  (%TimeActive * PowerActive)

Impacts of TEC

- TEC can allow more OEMs to participate in the ENERGY STAR program
- TEC allows for alternate strategies of optimizing energy use
- TEC sets the ENERGY STAR specification levels based on the total amount of energy consumed in a duty cycle as opposed to setting mode by mode levels
- With TEC, OEMs could get more credit for having a shorter Auto-Power Down timeout

Sample Calculated TEC

- TEC % calculation
  - TEC = ∑(%TimeOff * PowerOff) + (%TimeSleep * PowerSleep) + (%TimeIdle*PowerIdle)
- TEC Weightings (NB: the weightings are different from Proposal A)
  - **Off/Standby:** 10%
  - **Sleep:** 30%
  - **Idle:** 60%
- Industry has been accepting of the general approach using TEC when used

Proposed Test Procedures/Considerations

- Modal Approach:
  - IEC 62087
  - CEA 2013-A and CEA 2022
- Calculated TEC Approach:
  - Use of one of the Modal Approach test procedures
  - Maximum allowable energy use (kWh/yr) standard =
    (365/1000) *
    (On hours per day) * reference On Mode power [watts] +
    (Standby hours per day) * reference Standby Passive Mode power [watts]
  - Example: If a reference auto power down period of 4 hours and reference power of 8 watts for On and 1 watt for Standby Passive Mode are established, the maximum allowable energy use would be:

    Maximum allowable energy use (kWh/yr) standard = (365/1000)

    [7* 8 + 17 * 1] = 26.6 kWh/yr
- Duty Cycle/TEC Approach
  - The test procedure uses a real world work load representing an average users TV viewing experience.
  - This is then adjusted and expressed for per annum consumption

Overview of CEA 2013-A and CEA 2022

Timeline and Next Steps

ENERGY STAR's DTA Timeline

July 21, 2006
Host DTA workshop in DC to discuss test procedure, product definitions, etc.

October 3, 2006
Release Framework Document for comment and feedback

October 20, 2006
Comments due on Framework Document

October 25, 2006
Host stakeholder meeting to discuss Framework Document

November 2006
Release Draft 1 specification for comment and feedback/Host stakeholder meeting

December 2006
Release Final Draft and Final DTA specifications

Contacts

Katharine Kaplan Osdoba, EPA

Osdoba.katharine@epa.gov

(202) 343-9120

Mehernaz Polad, ICF International

mpolad@icfi.com

(202) 862-1175